HHS Public Access

Author manuscript

Contraception. Author manuscript; available in PMC 2018 February 19.

Published in final edited form as:

Contraception. 2009 March ; 79(3): 221–227. doi:10.1016/j.contraception.2008.09.011.

Unmet need for contraception among sex workers in Madagascar☆,☆☆

Maria R. Khan[a,*], **Abigail Norris Turner**[a], **Audrey Pettifor**[a], **Kathleen Van Damme**[b,c], **Ny Lovaniaina Rabenja**[c], **Noro Ravelomanana**[c], **Teresa Swezey**[a], **D'Nyce Williams**[d], **Denise Jamieson**[d], **the Mad STI Prevention Group**[1], and **Frieda Behets**[a,b]

[a]Department of Epidemiology, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA

[b]Department of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA

[c]University of North Carolina, Madagascar, Antananarivo 101, Madagascar

[d]Centers for Disease Control and Prevention, Atlanta, GA 30341, USA

Abstract

Background—The study was conducted to investigate past and future pregnancy preferences and contraceptive need among Malagasy sex workers.

Study Design—We analyzed data on pregnancy and contraceptive use collected during the baseline visit of a randomized, prospective formative trial which assessed diaphragm and microbicide acceptability among sex workers. To be eligible, women could not be pregnant or planning pregnancy for the next 2 months.

Results—Women (*N*=192) from four cities (Antananarivo, Antsiranana, Mahajanga and Toamasina) reported a median of 10 sex acts per week. Fifty-two percent reported a prior unwanted pregnancy, 45% at least one induced abortion and 86% that preventing future pregnancy was moderately to very important. During the last sex act, 24% used a hormonal method, 36% used a male condom, 2% used a traditional method and 38% used no method. Nearly 30% of participants reported that pregnancy prevention was moderately or very important but used no contraception at last sex; these women were categorized as having "unmet need" for contraception. In multivariable binomial regression analyses, factors associated with unmet need included low knowledge of contraceptive effectiveness [age- and site-adjusted prevalence ratio (PR): 2.1; 95% confidence interval (CI): 1.4–3.0] and low self-efficacy to negotiate condom use (age- and site-adjusted PR: 2.0; 95% CI: 1.4–3.0).

☆Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

☆☆This research was funded by The Centers for Disease Control and Prevention, Atlanta, GA, USA; CONRAD, Norfolk, Virginia, USA; and United States Agency for International Development (USAID), Washington, DC, USA.

*Corresponding author. National Development and Research Institutes, New York, NY 10010, USA. Tel.: +1 212 845 4447; fax: +1 917 438 0894. maria_khan@unc.edu (M.R. Khan).

[1]April Bell, Jennifer Legardy-Williams, Maurizio Maculuso, Daniel Newman, Ana Penman-Aguilar, Angela Prince, Mbolatiana Raharinivo, Bodo Randrianasolo, Justin Ranjalahy Rasolofomanana, Lee Warner, D'Nyce Williams.

Conclusions—Among these women, prior unwanted pregnancy and induced abortion were common and preventing future pregnancy was important, yet gaps in contraceptive use were substantial. Contraceptive knowledge and self-efficacy should be improved to promote contraceptive use by sex workers.

Keywords

Pregnancy intentions; Contraception; Unmet need; Sex worker; Madagascar

1. Introduction

Sexually transmitted infections (STIs) and unplanned pregnancy dually threaten women's reproductive health worldwide [1–3]. Women who trade sex for money, goods or services report a greater mean number of sex acts per month [4–6] than general-population women [7] and likely experience heightened vulnerability to both STIs and unintended pregnancy. Members of our group have recently documented high incidences of pregnancy among sex workers in Madagascar [5,8]. During a recent intervention trial promoting use of male and female condoms among sex workers in two Malagasy cities, 27% of sex workers became pregnant during the 18-month study period, and a substantial proportion had an induced abortion [8]. Use of highly effective modern contraception was relatively uncommon among these women (~16%) [8]. These data supported prior findings that sex workers are vulnerable to low contraceptive use and unplanned and unwanted pregnancy. Among a large sample of Cambodian sex workers surveyed in 2000, condom use appeared to be inconsistent, and less than 2% currently were using an additional modern contraceptive method; at least one-fifth of these women reported a prior induced abortion [9]. High levels of induced abortion also have been observed among sex workers in Kenya (86% lifetime prevalence) [10] and the Gambia (35% in the past 5 years) [11]. These studies suggested that unplanned pregnancy is an important public health concern among sex workers and that further study of pregnancy preferences and unmet need for contraception among sex workers was warranted.

We conducted a cross-sectional study on pregnancy preferences and unmet need for contraception among sex workers in Madagascar, a country with among the highest estimates of unmet need for contraception in the world [12]. We used data from the baseline visit of a randomized, prospective formative trial that assessed the acceptability of the diaphragm and candidate microbicide for use as potential female-controlled methods of STI prevention. To participate in the study, women could not be pregnant or planning pregnancy in the next 2 months. The purpose of the present study was to measure pregnancy history, future pregnancy preferences, knowledge and use of contraception, and levels of and factors associated with unmet need for contraception among Malagasy sex workers.

2. Materials and methods

The prospective trial methods have previously been described in detail [13]. Briefly, the diaphragm acceptability pilot trial was carried out at public health clinics located in the capital city Antananarivo and the coastal port cities Antsiranana, Mahajanga and Toamasina.

Eligibility criteria included age 15 to 55 years, not pregnant or planning pregnancy in the next 2 months, greater than three sex partners in the past month, less than 100% condom use in the past 2 weeks, no physical abnormality that precluded diaphragm use and no allergies to latex.

Peer counselors identified potential participants through community outreach efforts and invited them to attend a study site for formal screening. At the screening visit, among women who provided written informed consent for screening procedures, clinicians administered a brief eligibility checklist and conducted testing for pregnancy (Clearview HCG Combo; Wampole Laboratories, Cranbury, NJ, USA) and urinary tract infection (Multistix 10SG; Bayer, Tarry-town, NY, USA).

At enrollment, eligible women were randomized to one of four study arms: (1) candidate topical microbicide to be used with a latex diaphragm, (2) inert placebo gel to be used with a latex diaphragm, (3) candidate microbicide alone and (4) inert placebo gel alone. Clinicians provided counseling on use of assigned study products. A baseline questionnaire that assessed family planning indicators was administered. Women were asked to return for a follow-up visit each week for 4 weeks.

Participants were given a supply of male condoms at enrollment and each follow-up visit. Clinicians instructed women to use condoms during each sex act. Participants were also offered hormonal contraception free of charge, either oral contraceptive pills or injections, at enrollment and each follow-up visit.

Study staff reimbursed women for their travel and time spent at the clinic (approximately US**$5). The ethical review boards of the Ministry of Public Health, Antananarivo, Madagascar; the University of North Carolina at Chapel Hill; and the Centers for Disease Control and Prevention in Atlanta, GA, approved the research.

We conducted analyses of the baseline visit data using STATA version 8.0 (Stata Corp., College Station, TX, USA). We calculated frequencies and/or means of participants' background characteristics and family planning indicators.

Women were defined as having unmet need for contraception if they reported that preventing pregnancy was moderately or very important but failed to use a modern [intrauterine device (IUD), oral contraceptive pills, injections, implants, male condoms, female condoms, diaphragm or spermicide] or traditional (periodic abstinence or withdrawal) contraceptive method. The Demographic and Health Survey defines unmet need as failure to use any contraceptive method, among those who are presumably fecund and who wish to avoid childbearing or postpone it for at least 2 years [14]. Therefore for comparability, we also based our definition of unmet need on failure to use either a modern or traditional method.

We used binomial regression models to estimate unadjusted and age- and study site-adjusted prevalence ratios (PRs) and 95% confidence intervals (95% CIs) for the associations between unmet need for contraception and demographic, socieconomic and reproductive variables.

3. Results

3.1. Study population

Among 314 screened participants, we enrolled 192 eligible women (61%), 48 women in each of the four sites. Many women were ineligible for more than one reason. Women were most likely to be excluded because they reported 100% condom use in the past 2 weeks (37%), fewer than four partners in the past month (25%), planned or existing pregnancy (15%) or allergy to latex (11%).

Participants' median age was 29 years (Table 1). The majority of women were neither married nor cohabitating with a nonmarital partner (89%). Half of the women had received less than 6 years of education.

Eighty-one percent of participants reported that sex trade was a means of earning money, though recent or current sex trade was reported by all women. Participants reported a median of seven partners and 10 sex acts in a typical week.

Sixty-one percent of women reported using a condom the last time they had sex with a client. Forty-one percent reported having little or no control over condom use at last sex with a client. Forty-one percent of women self-reported a previous STI diagnosis.

3.2. Pregnancy history and preferences

Women reported a median of three prior pregnancies, two live births and two currently living children. Approximately one-quarter of women reported a prior spontaneous abortion and 4% reported a stillbirth.

Fifty-two percent of participants reported a prior unwanted pregnancy (Table 2). Of all women, 45% reported at least one prior induced abortion, 25% reported at least two induced abortions and 9% reported at least three induced abortions.

Among approximately one-quarter of participants, the current family size equaled or exceeded the ideal family size, suggesting these women desired no additional children. Eighty-six percent reported that preventing pregnancy was "moderately" or "very" important; 10% reported "moderately important"; and 76% reported "very important." Eighty-one percent worried "moderately" or "a lot" about getting pregnant. Thirty-five percent had high perceived risk of pregnancy, reporting that becoming pregnant was "moderately" or "highly" likely.

3.3. History of contraceptive use

The majority of women (92%) had previously used either a modern or traditional method of contraception (Table 2). Greater than half of women had ever used a hormonal method (55%), including injections (43% of women), oral contraceptive pills (36% of women) or hormonal implants (four women). One woman had used an IUD.

One-third (34%) of women had never used a hormonal method or the IUD but had used a barrier method or spermicide (Table 2). Among all women, 65% had ever used a male

condom for contraception, 5% had ever used a female condom, two women had ever used the diaphragm and two women reported ever having used spermicide.

3.4. Contraceptive use at last sex

Thirty-eight percent of women used no contraceptive method during the last sex act (Table 2). Twenty-four percent used a hormonal method, primarily injections or oral contraceptive pills. An additional 36% used a male condom. Very few (n=4) used only a traditional method during the last act.

The contraceptive method used at last sex differed by level of concern about pregnancy (data not presented in tables). Among women reporting that pregnancy prevention was “very important,” 29% used a hormonal method and 36% used a male condom. In contrast, among women who reported pregnancy prevention was “moderately important,” 5% used a hormonal method while 58% reported condom use (p=.09).

3.5. Prevalence of and factors associated with unmet need for contraception

Fifty-five women (29%) reported that preventing pregnancy was “moderately” or “very” important but used no contraceptive method at last sex and were classified as having unmet need for contraception. Among women reporting that preventing pregnancy was “moderately” or “very” important (n=165), we examined the prevalence of unmet need by selected factors (Table 3).

The age-adjusted prevalence of unmet need did not differ significantly across all study sites (χ^2 (3)=4.97, p=.17). We compared unmet need among women in coastal cities to those in the capital city Antanarivo, located in the country’s central plateau, as prior studies have documented higher levels of unmet need in some coastal cities than in the capital [14]. Compared to women in Antananarivo, unmet need was more prevalent among women in Mahajanga (age-adjusted PR: 2.1; 95% CI: 1.1–4.0) and appeared to be higher in Diego Suarez (age-adjusted PR: 1.9; 95% CI: 0.9–3.8) and Toamasina (age-adjusted PR: 1.7; 95% CI: 0.8–3.4), though these associations did not reach statistical significance.

Age was associated with unmet need (χ^2 (3)=7.66, p=.05). Women aged 35 years or older were more likely to experience unmet need than women in younger age groups (compared with 15- to 24-year-old women, age- and site-adjusted PR: 1.7; 95% CI: 1.0–2.9).

Unmet need was greater among women who were not married or who did not live with a nonmarital partner compared to married and cohabitating women (age- and site-adjusted PR: 1.7; 95% CI: 1.2–2.4).

Crowding in the home, defined as sleeping in the same room with four or more other individuals, was associated with unmet need (age- and site-adjusted PR: 2.2; 95% CI: 1.6–3.1), though other socioeconomic indicators were not associated.

The reproductive factors most strongly associated with unmet need were women’s knowledge about contraception and condom use self-efficacy. Women who were misinformed about contraceptive methods and believed that use of “no method” was “highly

effective" in preventing pregnancy or that either implants, injections, oral contraceptive pills or the IUD had no effectiveness in preventing pregnancy were twice as likely to have an unmet need for contraception than women who did not have these misconceptions (age- and site-adjusted PR: 2.1; 95% CI: 1.4–3.0). When adjusting for age, study site and crowding in the home, the association remained robust, though the estimate's precision decreased (adjusted PR: 2.0; 95% CI: 1.0–3.9). Unmet need was also more prevalent among women with low condom use self-efficacy. Compared to those reporting "a lot" or "complete" control over condom use at last sex, those with "none" or "a little bit" of control were twice as likely to have unmet contraceptive need (age- and site-adjusted PR: 2.0; 95% CI: 1.4–3.0). Unmet need was weakly associated with coital frequency and number of partners in a typical week and was not associated with report that sex work was a primary means of earning money, prior unwanted pregnancy or desired family size.

4. Discussion

Among this sample of Malagasy sex workers, prior unwanted pregnancy and induced abortion were common and desire to prevent future pregnancy was nearly universal, yet gaps in contraceptive use were substantial. Approximately 30% of women had an unmet need for contraception; although they reported that pregnancy prevention was moderately or very important to them, they used no contraceptive method at the last sex act. This level is slightly higher than reported in the Madagascar 2003 Demographic Health Survey data, which indicates that approximately one-quarter of general-population women experienced unmet need (defined as failure to use any contraceptive method, among those who were presumably fecund and who wished to avoid childbearing or postpone it for at least 2 years) [14]. The current study indicates that reproductive health programs for sex workers in Madagascar should intensify family planning efforts in addition to expanding STI treatment and prevention.

Our results highlight the significant public health concern of unmet need for contraception in Madagascar, a nation with among the highest levels of both unmet need and fertility in the world [12,15]. Unmet need translates to a woman's inability to control her reproductive intentions and, in a developing-country setting such as Madagascar, to excess morbidity and mortality resulting from complications during pregnancy and delivery and from unsafe abortion. Though abortion is illegal in Madagascar, it is frequently practiced [16], often used in lieu of contraception. Complications are commonplace [14] and contribute to Madagascar's high levels of maternal mortality [17,18].

This study indicated that low contraceptive knowledge was strongly associated with unmet need. This finding supports results from a multicountry analysis indicating that lack of knowledge about contraception was the most important determinant of unmet need for family planning during the mid-1990s [19]. Our analysis, conducted more than a decade later, highlights the continued need for improved family planning education efforts in Madagascar.

Unmet need was also associated with condom use self-efficacy, an indicator of women's empowerment. Women's empowerment has been identified as an important determinant of

increased contraceptive use and fertility decline [20], and family planning programs targeting sex workers should consider interventions to empower women and strengthen their skills in negotiating use of condoms and other contraceptive methods.

Many study participants relied on condoms to prevent pregnancy, an encouraging finding given the dual risk of STI among this population. However, effective pregnancy and disease prevention with male condoms relies on consistent and correct condom use at each sex act. Given the substantial proportion of women in this sample reporting little or no control over condom use with clients at the last sex, use of pregnancy prevention methods that do not rely on potentially uncooperative male partners would likely lead to a higher proportion of protected acts. At the same time, the fact that greater than one-third of these sex workers reported never having used a condom for contraceptive purposes suggests that clinic-based counseling and peer-education programs targeting this population should also continue to promote condoms for dual protection against STIs and pregnancy.

Unfortunately, among the 146 study participants who were not using hormonal contraception at the baseline visit, only 14 women (10%) accepted the complimentary hormonal contraception provided as benefit of study participation. A qualitative study conducted by others in our group indicated that, among women seeking care at public health clinics in Antananarivo, negative perceptions of hormonal contraception's side effects, namely, weight gain, prevented hormonal contraceptive use [21]. Concerns about side effects and inconvenience of contraception have become the most important factors driving unmet need in the developing world [22]. Reproductive health programs should identify barriers to modern contraceptive use to effectively counter negative perceptions of currently available methods. These study findings also highlight the continuing need for research into effectiveness of nonhormonal methods that dually protect against STIs and pregnancy, such as the diaphragm with microbicidal and spermicidal gel.

Estimates should be interpreted with caution because the sample size was modest and the study population was not a random sample representative of all sex workers in the study areas. Participants were recruited if they presented to the STI clinic for care and were interested in and eligible for the pilot trial. Exclusion of women who reported consistent condom use in the past 2 weeks may have contributed to an overestimation of the level of unmet need. However, estimating the prevalence and correlates of unmet need among sex workers who do not use condoms consistently is a relevant endeavor, because women in general and sex workers in particular lack power and autonomy in relationships to negotiate for protected sex [23–26] and our prior research suggests that the majority of women in this sex worker population are inconsistent condom users [27].

Despite these data limitations, to our knowledge, this study was the first to measure pregnancy intentions, contraceptive use and unmet need among a sex worker population. While estimates of unmet need for contraception are readily available for women in the general population, due to the consistent implementation of Demographic and Health Surveys in most resource-poor nations [28], reproductive health program planning would benefit from expanded research into pregnancy risk and barriers to contraceptive use among

sex workers. These women constitute a particularly vulnerable subpopulation whose reproductive health is threatened not only by risk of STI, but also by unplanned pregnancy.

Acknowledgments

Thanks to Wendy Githens Benazerga and Jocelyne Andriamiadana at the United States Agency for International Development (USAID) Madagascar for their support.

References

1. Bongaarts J. Trends in unwanted childbearing in the developing world. Stud Fam Plann. 1997; 28:267–77. [PubMed: 9431648]
2. Henshaw SK. Unintended pregnancy in the United States. Fam Plann Perspect. 1998; 30:24–9. [PubMed: 9494812]
3. World Health Organization. Global prevalence and incidence of selected curable sexually transmitted infections: overview and estimates. Geneva (Switzerland): WHO; 2001.
4. Ramjee G, Weber AE, Morar NS. Recording sexual behavior: comparison of recall questionnaires with a coital diary. Sex Transm Dis. 1999; 26:374–80. [PubMed: 10458629]
5. Behets F, Turner AN, Van Damme K, et al. Acceptability and feasibility of continuous diaphragm use among sex workers in Madagascar. Sex Transm Infect. 2005; 81:472–6. [PubMed: 16326849]
6. Morris CN, Ferguson AG. Estimation of the sexual transmission of HIV in Kenya and Uganda on the trans-Africa highway: the continuing role for prevention in high risk groups. Sex Transm Infect. 2006; 82:368–71. [PubMed: 16854995]
7. Blanc AK, Rutenberg N. Coitus and contraception: the utility of data on sexual intercourse for family planning programs. Stud Fam Plann. 1991; 22:162–76. [PubMed: 1949099]
8. Feldblum PJ, Nasution MD, Hoke TH, et al. Pregnancy among sex workers participating in a condom intervention trial highlights the need for dual protection. Contraception. 2007; 76:105–10. [PubMed: 17656179]
9. Delvaux T, Crabbe F, Seng S, Laga M. The need for family planning and safe abortion services among women sex workers seeking STI care in Cambodia. Reprod Health Matters. 2003; 11:88–95. [PubMed: 12800706]
10. Elmore-Meegan M, Conroy RM, Agala CB. Sex workers in Kenya, numbers of clients and associated risks: an exploratory survey. Reprod Health Matt. 2004; 12:50–7.
11. Pickering H, Todd J, Pepin J, et al. Prostitutes and their clients: a Gambian survey. Soc Sci Med. 1992; 34:75–88. [PubMed: 1738859]
12. Westoff, CF. New estimates of unmet need and the demand for family planning: DHS comparative report No. 14. Calverton (MD): Macro International Inc., MEASURE DHS; 2006.
13. Behets F, Turner AN, Van Damme K, et al. Vaginal microbicide and diaphragm use for sexually transmitted infection prevention: a randomized acceptability and feasibility study among high-risk women in Madagascar. Sex Transm Dis. 2008; 35(9):818–26. [PubMed: 18562985]
14. Macro International Inc. 2003/2004 Madagascar Demographic and Health Survey. Calverton (MD): Macro International Inc. MEASURE DHS; 2005.
15. Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J. Family planning: the unfinished agenda. Lancet. 2006; 368:1810–27. [PubMed: 17113431]
16. Family Planning Association of Madagascar. Maternal and child health/family planning and abortion in Madagascar. Afr J Fertil Sexual Reprod Heal. 1996; 1:53–5. [PubMed: 12159500]
17. Andriamady RC, Rakotoariso A, Ranjalahy RJ, Fidison A. Cases of abortions at the maternity hospital of Befelatanana in 1997. Arch Inst Pasteur Madagascar. 1999; 65:90–2. [PubMed: 12478968]
18. Blumenthal PD. Letter from Madagascar. Obstet Gynecol. 2006; 108:684–6. [PubMed: 16946231]
19. Westoff, CF., Bankole, A. Demographic and Health Surveys Comparative Studies No. 16. Calverton (MD): Macro International Inc; 1995. Unmet need: 1990–1994.

20. Larsen U, Hollos M. Women's empowerment and fertility decline among the Pare of Kilimanjaro region, Northern Tanzania. Soc Sci Med. 2003; 57:1099–115. [PubMed: 12878109]
21. Randrianasolo B, Swezey T, Van Damme K, et al. Barriers to the use of modern contraceptives and implications for woman-controlled prevention of sexually transmitted infections in Madagascar. J Biosoc Sci. 2008; 16:1–15.
22. Sedgh, G., Bankole, A., Singh, S., Hussain, R. Causes of unmet need for contraception in the developing world (poster presentation). New York: Population Association of America; 2007.
23. Ulin PR. African women and AIDS: negotiating behavioral change. Soc Sci Med. 1992; 34:63–73. [PubMed: 1738858]
24. Amaro H. Love, sex, and power. Considering women's realities in HIV prevention. Am Psychol. 1995; 50:437–47. [PubMed: 7598292]
25. Gupta GR, Weiss E. Women's lives and sex: implications for AIDS prevention. Cult Med Psychiatry. 1993; 17:399–412. [PubMed: 8112084]
26. Gómez C, Marín B. Gender, culture and power: barriers to HIV prevention strategies. J Sex Res. 1996; 33:355–62.
27. Behets FM, Rasolofomanana JR, Van Damme K, et al. Evidence-based treatment guidelines for sexually transmitted infections developed with and for female sex workers. Trop Med Int Health. 2003; 8:251–8. [PubMed: 12631316]
28. Robey B, Ross J, Bhushan I. Meeting unmet need: new strategies. Popul Rep J. 1996; 43:1–35.

Table 1

Demographic, socioeconomic and reproductive characteristics of enrolled sex workers, Madagascar, 2005 (*N*=192)

	n[a]	%
Socio-demographic		
Age (years)		
15–24 (referent)	55	28.7
25–29	45	23.4
30–34	33	17.2
≥35	59	30.7
Marital and cohabitation status		
Married and lives with husband	3	1.6
Lives with nonmarital partner	19	9.9
Not currently living with a marital or nonmarital partner	170	88.5
Education level		
<6 years of schooling	96	50.0
≥6 and <12 years of schooling	56	29.2
≥12 years of schooling	40	20.8
Has electricity at home		
Yes	113	58.9
No	79	41.2
Has running water at home		
Yes	34	17.7
No	158	82.3
Sleeps in a room with at least four others		
Yes	18	9.4
No	174	90.6
Sexual behavior		
Sex work cited as primary means of earning money		
Yes	36	18.7
No	156	81.3
Number of sex partners in a typical week		
0–4	42	21.9
5–9	80	41.7
10+	70	36.5
Number of sex acts in a typical week		
0–4	18	9.4
5–9	75	39.1
10+	98	51.0
Used condom during last sex act with a client		
Yes	117	60.9
No	74	38.5

	n[a]	%
Used condom during last sex act with husband/boyfriend[b]		
Yes	21	26.6
No	58	73.4
Low condom efficacy: reported “little” or “no” control over condom use during last sex with client		
Yes	79	41.2
No	113	58.9
Sexually transmitted infection (self-reported)		
Have ever been diagnosed with an STI		
Yes	79	41.2
No	110	57.3
Have ever had a genital ulcer		
Yes	61	31.8
No	131	68.2

[a]Totals may not sum to 192 due to missing values for some variables.

[b]Among the 79 women who reported having a husband/boyfriend.

Table 2

Pregnancy history, preferences and beliefs, and modern and traditional contraceptive method use among sex workers, Madagascar, 2005 (*N*=192)

	n[a]	%
Unwanted prior pregnancy		
Ever had an unwanted pregnancy		
Yes	100	52.1
No	92	47.9
Prior induced abortions, lifetime		
0	105	54.7
1	40	20.8
2	29	15.1
3+	18	9.4
Pregnancy preferences and beliefs		
Current family size equals or exceeds reported ideal family size		
Yes	49	25.5
No	143	74.5
Preventing pregnancy is moderately or very important		
Yes	165	85.9
No	21	10.9
Worries moderately or a lot about becoming pregnant		
Yes	156	81.3
No	32	16.7
High perceived risk: believes chances of pregnancy are moderate or high		
Yes	67	34.9
No	119	62.0
Low knowledge about effectiveness of long-term modern contraceptive methods[b]		
Yes	29	15.1
No	163	84.9
Contraceptive method use		
History of contraceptive use		
Ever used a hormonal method or the intrauterine device (IUD)[c]	106	55.2
Ever used a barrier device or spermicide (no prior hormonal or IUD use)[d]	66	34.4
Ever used a traditional contraceptive method (no prior modern contraceptive use)[e]	4	2.1
Never used any contraception	16	8.3
Contraceptive use at last sex		
Used a hormonal method[c]	46	24.0
Used a male condom (no hormonal method use at last sex)	70	36.4
Used a traditional method (no hormonal or barrier method use at last sex)[e]	4	2.1
No contraception use at last sex	72	37.5

[a] Totals may not sum to 192 due to missing values for some variables.

[b] Women coded as having a “low” level of contraceptive knowledge reported that use of “no method” was “highly effective” in preventing pregnancy or that oral contraceptive pills, injections, implants or the IUD had no effectiveness in preventing pregnancy.

[c] Hormonal methods included oral contraceptive pills, injections or implants. Women in this group could have also used a barrier device, spermicide or traditional methods.

[d] Barrier methods included male condoms, female condoms or the diaphragm. Women in this group may have used traditional methods.

[e] Traditional methods included rhythm/counting days and withdrawal.

Table 3

Unadjusted and adjusted PRs and 95% CIs for the associations between unmet need for contraception[a] and selected factors, among sex workers stating that pregnancy prevention was moderately or very important, Madagascar, 2005 (*n*=165)

Characteristics	Unmet Need		Unadjusted		Adjusted for age and study site	
	n	%	PR	95% CI	PR	95% CI
Study site						
Antananarivo (referent)	9/43	20.9	1.0		1.0	
Mahajanga	18/42	42.9	1.6	(0.8–3.3)	2.1	(1.1–4.0)
Toamasina	12/36	33.3	1.7	(0.9–3.5)	1.7	(0.8–3.4)
Diego Suarez	16/44	36.4	2.0	(1.0–4.0)	1.9	(0.9–3.8)
Socio-demographic						
Age						
15–24 (referent)	15/52	28.9	1.0		1.0	
25–29	12/41	29.3	1.0	(0.5–1.9)	1.0	(0.5–1.9)
30–34	6/26	23.1	0.8	(0.4–1.8)	0.8	(0.4–1.9)
≥35	22/46	47.8	1.7	(1.0–2.8)	1.7	(1.0–2.9)
Married or lives with main partner						
Yes (referent)	6/20	30.0	1.0		1.0	
No	49/145	33.8	0.9	(0.4–1.8)	1.7	(1.2–2.4)
Education level						
<6 years of schooling (referent)	28/85	32.9	1.0		1.0	
≥6 and <9 years of schooling	14/46	30.4	0.9	(0.5–1.6)	0.8	(0.5–1.3)
≥9 years of schooling	13/34	38.2	1.2	(0.7–2.0)	1.1	(0.6–1.7)
Has electricity at home						
Yes (referent)	26/69	37.7	1.0		1.0	
No	29/96	30.2	0.8	(0.5–1.2)	0.6	(0.4–0.9)
Has running water at home						
Yes (referent)	45/134	33.6	1.0		1.0	
No	10/31	32.3	1.0	(0.6–1.7)	0.9	(0.6–1.6)
Sleeps in a room with at least four others						
Yes (referent)	47/149	31.5	1.0		1.0	

Characteristics	Unmet Need		Unadjusted		Adjusted for age and study site	
	n	%	PR	95% CI	PR	95% CI
No	8/16	50.0	1.6	(0.9–2.7)	2.2	(1.6–3.1)
Reproductive						
Sex work was primary means of earning money						
No (referent)	11/32	34.4	1.0		1.0	
Yes	44/133	33.1	1.0	(0.6–1.6)	0.9	(0.6–1.5)
Has ≥10 sex partners in a typical week (≥ median)						
No (referent)	25/82	30.5	1.0		1.0	
Yes	30/83	36.1	1.2	(0.8–1.78)	1.1	(0.7–1.7)
Has ≥10 sex acts in a typical week (≥median)						
No (referent)	24/83	28.9	1.0		1.0	
Yes	31/82	37.9	1.3	(0.8–2.0)	1.2	(0.8–1.8)
Low condom efficacy: reported “little” or “no” control over condom use during last sex with client						
No (referent)	25/98	25.5	1.0			
Yes	30/67	44.8	1.8	(1.1–2.7)	2.0	(1.4–3.0)
Unwanted prior pregnancy						
No (referent)	24/77	31.2	1.0		1.0	
Yes	31/88	35.2	1.1	(0.7–1.7)	1.0	(0.6–1.6)
Family size equals or exceeds ideal family size						
No (referent)	41/120	34.2	1.0		1.0	
Yes	14/45	31.1	0.9	(0.6–1.5)	0.8	(0.5–1.2)
Low knowledge about effectiveness of long-term modern contraceptive methods[b]						
No	42/139	30.2	1.0		1.0	
Yes	13/26	50.0	1.7	(1.0–2.6)	2.1	(1.4–3.0)

[a] Among women who reported that preventing pregnancy was moderately or very important (n=165), those who failed to use any contraceptive method at last sex (modern or traditional method) were categorized as having unmet need for contraception.

[b] Women coded as having a “low” level of contraceptive knowledge reported that use of “no method” was “highly effective” in preventing pregnancy or that oral contraceptive pills, injections, implants or the intrauterine device had no effectiveness in preventing pregnancy.

Contraception. Author manuscript; available in PMC 2018 February 19.